

Claims

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1. A gerotor guide comprising a gerotor housing having an internal gerotor guide profile expanded by a dimension g from a geometric figure satisfying the hypocycloid parametric equations $x = 0.25R \cos\theta + 0.75R \cdot \cos\theta/3$ and $y = 0.25R \cdot \sin\theta - 0.75R \cdot \sin\theta/3$ where g is a number from 0.1R to 0.5R and R is the radius of the large circle in the hypocycloid.
- 10 2. A support for a substantially horizontal storage unit comprising a gerotor guide of claim 1 installed on a 90° corner of a substantially horizontal surface.
3. A support of claim 2 wherein said horizontal surface is a countertop.
- 15 4. A support of claim 2 wherein said horizontal surface is in a cabinet.
5. A gerotor guide of claim 1 wherein said housing includes a substantially planar bearing.
6. Turntable apparatus comprising a gerotor guide of claim 1, a gerotor characterized by an external profile for rotation within said gerotor guide profile, and a turntable attached to said gerotor.
- 20 7. Turntable apparatus of claim 6 wherein said turntable is in the shape of a Reuleaux triangle having a width W, the external profile of said gerotor has three lobes and three concave edges, and the centers of said gerotor and said gerotor guide are 0.0773W apart.
- 25 8. Turntable apparatus comprising (a) a turntable in the shape of a Reuleaux triangle, said turntable having three apexes, a top and an underside, and having a width W (b) a gerotor fixed to the underside of said turntable, said gerotor having an underside, and (c) a gerotor guide, said gerotor being situated within said gerotor guide so that the center of said gerotor revolves around the center of said gerotor guide as it is moved within said gerotor guide, said centers being a distance 0.0773W apart, whereby said

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apexes of said turntable describe a substantially square area as they are turned, said turntable apparatus including at least one substantially planar bearing surface for forming a bearing interface.

9. Turntable apparatus of claim 8 wherein said at least one substantially planar bearing surface forms a bearing interface between said underside of said gerotor and said gerotor guide.

5 10. Turntable apparatus of claim 8 wherein said at least one substantially planar bearing surface forms a bearing interface between said underside of said turntable and said gerotor guide.

10 11. Turntable apparatus of claim 8 wherein said gerotor guide has an internal profile which is an expansion by an expansion factor gR of a profile which satisfies the hypocycloid parametric equations $x = 0.25R\cdot\cos\theta + 0.75R\cdot\cos\theta/3$ and $y = 0.25R\cdot\sin\theta - 0.75R\cdot\sin\theta/3$ where R is the radius of the large circle of the hypocycloid and g is a number from 0.1 to 0.5, and wherein R is $0.6184W$.

15 12. A turntable for manual turning, said turntable being in the shape of a Reuleaux triangle and having a gerotor attached thereto, at least one of said turntable and said gerotor having a substantially planar bearing surface thereon.

20 13. A turntable of claim 12 wherein said substantially planar bearing surface is on the underside of said turntable.

14. A turntable of claim 12 wherein said substantially planar bearing surface is on the underside of said gerotor.

15. A turntable of claim 12 wherein said gerotor has three substantially identical lobes.

25 16. A turntable of claim 12 made from countertop material.

17. A turntable of claim 12 including a gerotor guide, said gerotor guide including a guide profile determined by expanding the path followed by a point on a circle 0.4638 of the width of said Reuleaux triangle as it turns in a hypocycloid relation to a circle 0.6184 of the width of said Reuleaux

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triangle, said circle being centered in said gerotor guide, said gerotor being set in said gerotor guide to guide the rotation of said turntable.

18. Turntable apparatus comprising (a) a turntable of claim 12 including a gerotor guide having an internal guide profile which is expanded uniformly by a dimension g around the periphery of a figure satisfying the parametric hypocycloid equations $x = 0.25R \cdot \cos\theta + 0.75R \cdot \cos\theta/3$ and $y = 0.25R \cdot \sin\theta - 0.75R \cdot \sin\theta/3$ where R is the radius of the large circle of the hypocycloid and g is a value from $0.1R$ to $0.5R$, and wherein said gerotor has a perimeter which is expanded uniformly by said dimension g around the periphery of a figure satisfying the parametric hypocycloid equations $x = r/3 \cos \theta + 2r/3 \cos \theta/2$ and $y = r/3 \sin \theta - 2r/3 \sin \theta/2$, where r is $0.75R$.

5 19. Turntable apparatus of claim 18 wherein at least one of said gerotor and said gerotor guide has a substantially planar bearing surface.

10 20. Turntable apparatus of claim 19 wherein said gerotor and said gerotor guide have interfacing substantially planar bearing surfaces.

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